IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of:

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Application No.: TO BE ASSIGNED   Group Art Unit: TO BE ASSIGNED

Filed: March 10, 2004   Examiner:

For: INFORMATION STORAGE MEDIUM HAVING DATA STRUCTURE FOR BEING
       REPORDUCED ADAPTIVELY ACCORDING TO PLAYER STARTUP INFORMATION

SUBMISSION OF VERIFIED TRANSLATION OF NON-ENGLISH LANGUAGE PROVISIONAL APPLICATION

Assistant Commissioner for Patents
Washington, D.C. 20231

Sir:

The applicant(s) submit(s) herewith a copy of a verified translation of the following non-English language provisional application:

Provisional Application No.60/456,204

Filed: March 21, 2003

It is respectfully requested that the English language translation of the non-English language provisional application be made of record along with the Utility application filed herewith.

Respectfully submitted,

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METHOD OF SELECTING INITIAL MODE IN INFORMATION STORAGE MEDIUM STORING INTERACTIVE CONTENTS, METHOD OF EXECUTING INITIAL INTERACTIVE APPLICATION ACCORDING TO LANGUAGES IN INTERACTIVE MODE, AND INFORMATION STORAGE MEDIUM AND REPRODUCTION APPARATUS USING THE SAME

BRIEF DESCRIPTION OF THE DRAWINGS

FIGS. 1 through 4 are views provided for describing the present invention.

BACKGROUND OF THE INVENTION

1.   Field of the Invention and description of the Related Art

When reproducing interactive contents containing audio-visual (AV) data and markup document to be reproduced therewith, a user can selectively reproduce the interactive contents in an interactive mode or video mode according to his/her preference, after inserting an information storage medium storing the interactive contents into a reproduction apparatus.   If the user selects the interactive mode, the reproduction apparatus selects an Enhanced AV (ENAV) application to be first executed by a first read startup file.   Generally, such ENAV applications are classified according to languages used on an ENAV page.   Therefore, when the information storage medium is reproduced by the reproduction apparatus, there is a need for a method of selecting an initial mode and a method of easily and efficiently selecting and executing the ENAV applications classified according to the languages used on the ENAV page.

FIG. 1 is a flow chart illustrating an initial process performed when the reproduction apparatus reproduces the information storage medium storing the interactive contents containing the AV data and markup document to be reproduced therewith.   Referring to FIG. 1, if the information storage medium is inserted into the reproduction medium, the reproduction apparatus searches for a startup document file in a DVD_ENAV directory to determine whether the inserted information storage medium is an information storage medium for ENAV.   If the reproduction apparatus fails to locate the startup document file, it is determined that the inserted information storage medium is a conventional DVD-video information storage medium or an

1

unsuitable information storage medium, and accordingly the process in video mode will be performed or no process will be performed.

If the reproduction apparatus locates the startup document file, the reproduction apparatus determines that the inserted information storage medium is an ENAV disc storing the interactive contents, and reproduces the interactive contents in the interactive mode or video mode depending on the user's selection. However, when the reproduction apparatus initially accesses the inserted information storage medium, the reproduction apparatus cannot decide a reproduction mode. For this reason, according to an aspect of the present invention, a method of selecting an initial reproduction mode is provided.

Referring to FIG. 1, in a case where reproduction is performed in the interactive mode using the mode selection method according to the present invention, the reproduction apparatus reads, inspects, and interprets the startup document file, and then, reads, inspects, and interprets "walled garden list" file and "loading information" file on the basis of the interpreted startup document file, thereby reproducing on the screen an ENAV document to be initially displayed.

FIG. 2 shows a STARTUP.XML file made using the markup document, as an example of the startup document file. Referring to FIG. 2, the startup document file is largely comprised of two elements, wherein one is a "walledgarden" element and the other is an "application" element.

The "walledgarden" element refers to a list file for walled garden, which lists network areas that are accessed through the inserted information storage medium or a list of files that are accessed by parental levels.

The "application" element refers to loading information for reproducing an ENAV application to be initially executed. A "condition" element included in the "application" element is provided for selecting an ENAV application to be initially reproduced according to the user's preference, among various ENAV applications included in the startup document file. A "param" element in the "condition" element is provided for representing an attribute value as a reference for selecting a corresponding ENAV application.

Referring to FIG. 2, two "application" elements exist in the STARTUP.XML file. The ENAV application referred to by the first "application" element is represented by small English letters composed of two characters, as defined in ISO-639, to indicate that the language constructing the corresponding document is English. The

2

contents included in the ENAV application referred to by the second "application" element is the same as that included in the ENAV application referred to by the first "application" element, except for the fact that the language constructing the corresponding document is Korean. Accordingly, the reproduction apparatus should initially execute one of both applications. However, the conventional technique has not considered which one of the ENAV applications should be initially executed. Therefore, according to another aspect of the present invention, a method of selecting a specific ENAV application is provided in the case where a plurality of ENAV applications are referred to according to languages used in the startup document file.

SUMMARY OF THE INVENTION

The present invention provides a method of determining a mode to be initially executed in a reproduction apparatus, when interactive contents containing AV data and markup document to be reproduced therewith are reproduced, and a method of selecting an ENAV application to be initially executed when the determined mode is an interactive mode.

DETAILED DESCRIPTION OF THE INVENTION

The following components are provided according to the present invention.

(1)   First Playback Mode (FPM) parameter of determining an initial reproduction mode

(2)   Initial Language Code for ENAV application parameter of determining a first ENAV application

FIG. 3 is a table listing system parameters for a reproduction apparatus for reproducing interactive contents. This table is a table in which two new parameters are added to System Parameters (SPRMs) defined in "DVD Specifications for Read-Only Disc Part3 Video Specification". Zero-th through twenty-th parameters are described in detail in the specifications, and thus, the detailed descriptions thereof are omitted.

The contents used for the system parameters store numeral values having a constant size of 2-byte where each parameter has 0 or positive integer value in 16 bits. Also, SPRMs 11 through 22 are called Player parameters. Since SPRM 16, SPRM 18, SPRM 21, and SPRM 22, which are used in the present invention, have

only a read attribute, the values of the SPRMs can be set upon initial-access, and the set values cannot be changed by other domains.

Now, according to an aspect of the present invention, a method of selecting an initial execution mode of corresponding contents, that is, one of a video mode and interactive mode, when an information storage medium storing initial interactive contents is inserted into the reproduction apparatus will be described. In order to perform such selection, the present invention uses a system parameter capable of setting a first play back mode, that is, SPRM 21.

FIG. 4 shows a data structure for describing the SPRM 21 in detail. The SPRM 21 has a value of 1b as an initial value.

Meanings of the values of SPRM 21 are given below.

flag_FPM   0b: Video Mode
                        1b: Interactive Mode

If a user sets a play back mode, according to his/her preference, in the reproduction apparatus, the set mode value is stored in the SPRM 21. Then, the reproduction apparatus decides a mode to be initially reproduced with reference to the value stored in the SPRM 21 just after the information storage medium storing the interactive contents is inserted to the reproduction apparatus.

According to another aspect of the present invention, three methods of selecting an ENAV application to be initially executed according to the languages used in an interactive mode, are provided.

The first method is to use SPRM 16. The SPRM 16 stores audio-streams to be reproduced at the same time as video-streams of DVD-Video, in a format defined in ISO-639, like a language attribute used in the "param" element in the ENAV application. Accordingly, the ENAV application to be initially executed can be selected with reference to a set value of the SPRM 16.

The second method is to use SPRM 18. SPRM 18 stores the audio language to be reproduced with a movie. Most users use the language used when the movie is made as it is and use the captions of their local languages in the movie. Accordingly, the language used in the sub-picture of DVD-Video can be used in ENAV application. That is, the ENAV application is selected with reference to the value stored in SPRM 18.

The third method is to use SPRM 22. The bit-stream structure of SPRM 22 is the same as that of SPRM 16 or SPRM 18. However, SPRM 16 is a parameter

for audio of DVD-Video and SPRM 18 is a parameter for a sub-picture, while SPRM 22 stores an Initial Language Code value for an ENAV application.

By using the methods described above, an initial playback mode, or the ENAV application to be initially executed according to the languages in an interactive mode, can be easily selected.

While the present invention has been particularly shown and described with reference to exemplary embodiments thereof, it will be understood by those of ordinary skill in the art that various changes in form and details may be made therein without departing from the spirit and scope of the present invention as defined by the following claims.

<u>What is claimed is:</u>

     1.   A method of selecting a first play back mode (FPM) to be initially executed, using a system parameter having information related to a mode to be initially reproduced.

     2.   A method of selecting an enhanced audio-visual (ENAV) application according to languages using a system parameter, when reproduction is performed in an interactive mode.

     3.   The method of claim 2, wherein the system parameter is SPRM 16.

     4.   The method of claim 2, wherein the system parameter is SPRM 18.

     5.   The method of claim 2, wherein the system parameter is a system parameter having an initial language code for an ENAV application.

     6.   A reproduction apparatus for selecting a first play back mode to be initially executed, using a system parameter having information related to a mode to be first reproduced, and reproducing.

     7.   A reproduction apparatus for selecting an ENAV application according to the languages used when reproduction is performed in an interactive mode, using the method according to any one of claims 3 through 5, and reproducing.

Abstract of the Disclosure

Provided are a method of selecting an initial mode in an information storage medium storing interactive contents, a method of executing an interactive application to be initially executed according to languages in an interactive mode, and a storage medium and reproduction apparatus using the same. The methods include selecting a play back mode to be initially executed using a system parameter having information related to a mode to be initially reproduced. Therefore, it is 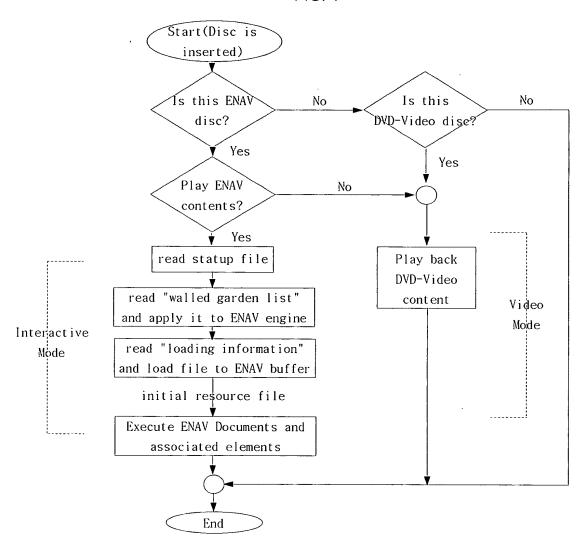possible to easily select an initial playback mode, or an ENAV application to be initially executed according to the languages in an interactive mode.

5

10

7

FIG. 1

```
          ┌─────────────────┐
          │   Start(Disc is │
          │    inserted)    │
          └────────┬────────┘
                   │
                   ▼
            ╱─────────────╲        No      ╱─────────────╲        No
           ╱  Is this ENAV  ╲───────────▶ ╱    Is this     ╲──────────────┐
           ╲     disc?      ╱             ╲ DVD-Video disc? ╱              │
            ╲─────────────╱               ╲─────────────╱                 │
                   │ Yes                          │ Yes                   │
                   ▼                              ▼                        │
            ╱─────────────╲        No           ( )                       │
           ╱   Play ENAV    ╲─────────────────▶                           │
           ╲  contents?     ╱                    │                        │
            ╲─────────────╱                      │                        │
                   │ Yes                         ▼                        │
          ┌─────────────────┐          ┌──────────────────┐              │
          │ read statup file│          │    Play back     │              │
          └────────┬────────┘          │    DVD-Video     │              │
                   │                   │    content       │   Video      │
          ┌─────────────────────┐      └────────┬─────────┘   Mode       │
          │ read "walled garden │               │                        │
          │ list" and apply it  │               │                        │
          │  to ENAV engine     │               │                        │
          └──────────┬──────────┘               │                        │
          ┌─────────────────────┐               │                        │
          │ read "loading       │               │                        │
          │ information" and     │               │                        │
          │ load file to ENAV    │               │                        │
          │     buffer          │               │                        │
          └──────────┬──────────┘               │                        │
          initial resource file                 │                        │
          ┌─────────────────────┐               │                        │
          │ Execute ENAV        │               │                        │
          │ Documents and       │               │                        │
          │ associated elements │               │                        │
          └──────────┬──────────┘               │                        │
                     │                           │                        │
                     ▼                           ▼                        │
                    ( )◀───────────────────────────────────────────────┘
                     │
                     ▼
              ┌────────────┐
              │    End     │
              └────────────┘
```

Interactive Mode

Video Mode

FIG. 2

```
<startup>
        <walledgarden uri="dvd://dvd_enav/walledgarden.lst" />
        <application uri="dvd://dvd_enav/LoadingInformation1.ldi" >
                <condition capability="locale" />
                        <param name="lang" value="en" />
                </condition>
        </application>
        <application uri="dvd://dvd_enav/LoadingInformation2.ldi" >
                <condition capability="locale" />
                        <param name="lang" value="kr" />
                </condition>
        </application>
</startup>
```

FIG. 3

SPRM	Meaning
0	Menu Description Language Code (M_LCD)
1	Audio stream number(ASTN) for Title Domain(TT_DOM)
2	Sub-picture stream number(SPSTN) and On/Off flag for TT_DOM
3	Angle number(AGLN) for TT_DOM
4	Title Number(TTN) for TT_DOM
5	VTS Title number(VTS_TTN) for TT_DOM
6	Title PGC number(TT_PGCN) for TT_DOM
7	Part_of_Title number(PTTN) for One_Sequential_PGC_Title
8	Highligthed Button number(HL_BTNN) for Selection state
9	Navigation Timer(NV_TMR)
10	TT_PGCN for NV_TMR
11	Player Audio Mixing Mode(P_AMXMD) for Karaoke
12	Country Code(CTY_CD) for Parental Management
13	Parental Level(PTL_LVL)
14	Player Configuration(P_CFG) for Video
15	P_CFG for Audio
16	Initial Language Code(INI_LCD) for Audio Stream(AST)
17	Initial Language Code extension(INI_LCD_EXT) for AST
18	INI_LCD for Sub-picture Stream(SPST)
19	INI_LCD_EXT for SPST
20	Player Region Code
21	Flag for First Play back Mode(flag_FPM)
22	Initial Language Code(INI_LCD) for ENAV Application
23	

FIG. 4

b15	b14	b13	b12	b11	b10	b9	b8
reserved							

b7	b6	b5	b4	b3	b2	b1	b0
reserved							flag_FPM